

CLAIMS

What is claimed is:

1. An aerial vehicle recovery system comprising:
5 a landing pad configured to be supported on a supporting surface, the landing pad comprising an upwardly facing capture surface comprising a passive retaining medium; and
a shoe configured to be mounted to a landing element of an aerial vehicle, the shoe comprising a passive retaining
10 medium configured to interface with the passive retaining medium of the landing pad to retain the aerial vehicle to the landing pad.
2. The system of claim 1, wherein the landing pad further
15 comprises a base, and the passive retaining medium of the landing pad comprises a passive engagement component supported by the base.
3. The system of claim 2, wherein the passive engagement
20 system component of the landing pad extends from a substrate supported by the base.
4. The system of claim 3, wherein the passive engagement
25 system component of the landing pad comprises a plurality of stems extending from the substrate.
5. The system of claim 3, wherein the substrate is affixed to an upper surface of the base of the landing pad.
- 30 6. The system of claim 3, wherein the substrate is integrally formed with the base of the landing pad.

7. The system of claim 1, wherein the passive retaining medium of the landing pad comprises a passive engagement component.

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8. The system of claim 1, wherein the passive retaining medium of the landing pad comprises a sticky medium.

9. The system of claim 1, wherein the passive retaining medium of the landing pad comprises a tape.

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10. The system of claim 1, wherein the passive retaining medium of the landing pad comprises an adhesive.

11. The system of claim 1, wherein the passive retaining medium of the landing pad comprises a putty.

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12. The system of claim 1, wherein the shoe further comprises a base and the passive retaining medium of the shoe comprises a passive engagement component supported by the base.

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13. The system of claim 12, wherein the passive engagement system component of the shoe extends from a substrate supported by the base.

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14. The system of claim 13, wherein the passive engagement system component of the shoe comprises a plurality of stems extending from the substrate.

15. The system of claim 13, wherein the substrate is affixed to a lower surface of the base of the shoe.

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16. The system of claim 13, wherein the substrate is integrally formed with the base of the shoe.
- 5 17. The system of claim 1, wherein the passive retaining medium of the shoe comprises a passive engagement component.
18. The system of claim 1, wherein the passive retaining medium of the shoe comprises a sticky medium.
- 10 19. The system of claim 1, wherein the passive retaining medium of the shoe comprises a tape.
20. The system of claim 1, wherein the passive retaining medium of the shoe comprises an adhesive.
- 15 21. The system of claim 1, wherein the passive retaining medium of the shoe comprises a putty.
- 20 22. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise self-engaging fasteners.
23. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise hook and loop fasteners.
- 25 24. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise hook-to-hook fasteners.
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25. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise stems each having a stalk terminating with a hook.

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26. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise stems each having a stalk terminating with a cap.

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27. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise an elastomeric material.

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28. The system of claim 1, wherein the passive retaining medium of the landing pad and the passive retaining medium of the shoe comprise a polyolefin material.

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29. The system of claim 1, wherein the landing pad further comprises a base including load carrying members operative to transfer a load on the landing pad to a supporting surface.

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30. The system of claim 29, wherein the base of the landing pad comprises a composite material comprising the load carrying members embedded in a matrix material.

31. The system of claim 30, wherein the matrix material comprises a polyurethane material.

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32. The system of claim 29, wherein the load carrying members are oriented unidirectionally.

33. The system of claim 29, wherein the load carrying members comprise a fiberglass material.
- 5 34. The system of claim 29, wherein the load carrying members comprise rods.
35. The system of claim 29, wherein the load carrying members comprise flexible straps.
- 10 36. The system of claim 1, wherein the landing pad is rollable.
37. The system of claim 1, wherein the landing pad is
- 15 foldable.
38. The system of claim 1, wherein the landing pad is flexible.
- 20 39. The system of claim 1, wherein the landing pad is resilient.
40. The system of claim 1, wherein the landing pad is energy-absorbing.
- 25 41. The system of claim 1, wherein the landing pad further comprises a plurality of pad sections and one or more joint fittings configured to attach the plurality of pad sections together.
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42. The system of claim 41, further comprising load carrying members extending transversely across joints between the pad sections.

5 43. The system of claim 41, wherein the joint fittings comprise hinged joint fittings.

44. The system of claim 41, wherein the joint fittings are removably affixed to the pad sections.

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45. The system of claim 1, wherein the landing pad further comprises a plurality of pad sections and a joint attachment mechanism configured to attach the plurality of pad sections together.

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46. The system of claim 1, wherein the landing pad further comprises a plurality of pad sections attached together along hinged joints.

20 47. The system of claim 46, wherein the hinged joints are integral with the pad sections.

48. The system of claim 46, wherein the hinged joints are permanently affixed to the pad sections.

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49. The system of claim 46, wherein the hinged joints are removably affixed to the pad sections.

30 50. The system of claim 1, wherein the landing pad further includes an energy-absorbing layer.

51. The system of claim 1, wherein the landing pad further includes an energy-absorbing layer between two panels.
52. The system of claim 51, wherein the panels comprise panel sections, and the panel sections of one of the panels are attached together along hinged joints
53. The system of claim 51, wherein the panels are rigid.
54. The system of claim 51, wherein the panels are semi-rigid.
55. The system of claim 1, wherein the landing pad further comprises a panel having first and second sides and energy-absorbing legs affixed to the first side of the panel, and the passive retaining medium is supported by the second side of the panel.
56. The system of claim 55, wherein the panel comprises panel sections attached together along hinged joints.
57. The system of claim 1, wherein the landing pad further includes:
load carrying members operative to transfer a load on the landing pad to a supporting surface; and
a securing system in load transferring communication with the load carrying members and configured to affix the landing pad to a supporting surface.
58. The system of claim 57, wherein the securing system comprises fittings disposed along edges of the landing pad.

59. The system of claim 58, wherein the fittings are removably attachable along edges of the landing pad.
- 5 60. The system of claim 58, wherein the fittings comprise clamp mechanisms attachable along edges of the landing pad.
61. The system of claim 58, wherein the fittings are permanently affixed along edges of the landing pad.
- 10 62. The system of claim 57, wherein the securing system comprises fittings having rope or strap attachment components.
63. The system of claim 62, wherein the rope or strap attachment components comprise rings, loops, or eyes.
- 15 64. The system of claim 1, wherein the shoe is elongated from a front end to a back end and curved from the front end to the back end.
- 20 65. The system of claim 1, wherein the shoe further comprises a base, the passive retaining medium supported by the base.
66. The system of claim 65, wherein the base of the shoe comprises a flat pad.
- 25 67. The system of claim 65, wherein the base of the shoe is rigid.
- 30 68. The system of claim 65, wherein the base of the shoe is semi-rigid.

69. The system of claim 65, wherein the base of the shoe is flexible.

5 70. The system of claim 1, further comprising a fastening system configured to fasten the shoe to the lowermost landing element of the aerial vehicle.

71. The system of claim 70, wherein the fastening system
10 comprises at least one pair of upwardly extending tabs on opposed sides of the shoe and a fastening element fastenable between the tabs of a pair of tabs.

72. The system of claim 70, wherein the fastening system
15 comprises a hose clamp.

73. The system of claim 1, further comprising a transport cart configured to store and transport the landing pad.

20 74. The system of claim 1, further comprising a transport cart configured to transport the aerial vehicle.

75. The system of claim 74, wherein the transport cart includes a hoist mechanism configured to hoist the aerial
25 vehicle onto the transport cart.

76. The system of claim 74, wherein the transport cart includes a jack mechanism configured to jack the aerial vehicle onto the transport cart.

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77. The system of claim 1, wherein the landing pad is securable to a ship's deck.
78. The system of claim 1, wherein the landing pad is secured
5 to a ship's deck.
79. The system of claim 1, wherein the landing pad is securable to a truck bed.
- 10 80. The system of claim 1, wherein the landing pad is secured to a truck bed.
81. The system of claim 1, wherein the landing pad is securable to an offshore platform.
- 15 82. The system of claim 1, wherein the landing pad is secured to an offshore platform.
83. The system of claim 1, wherein the landing pad is
20 securable to ground.
84. The system of claim 1, wherein the landing pad is secured to ground.
- 25 85. A method for recovering an aerial vehicle using the recovery system of claim 1 comprising:
 providing the landing pad on a support surface; and
 landing the aerial vehicle with the shoe mounted on the lowermost landing element on the landing pad with the passive
30 retaining medium of the landing pad and the passive retaining medium of the shoe in retention.

86. The method of claim 85, further comprising:
removing the shoe from the aerial vehicle while the
vehicle is on the landing pad; and
5 removing the aerial vehicle from the landing pad, leaving
the shoe engaged on the landing pad.
87. A method for recovering an aerial vehicle comprising:
providing a landing pad configured to be supported on a
10 supporting surface, the landing pad comprising an upwardly
facing capture surface comprising a passive retaining medium;
and
landing the aerial vehicle on the landing pad, a landing
element of the aerial vehicle retained by the passive retaining
15 medium on the capture surface.
88. An aerial vehicle recovery system comprising:
an aerial vehicle having a landing element; and
a passive retaining medium mounted to the landing element
20 and configured to retain the aerial vehicle on a landing
surface.
89. The system of claim 88, wherein the passive retaining
medium comprises a passive engagement component.
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90. The system of claim 88, wherein the passive retaining
medium comprises a hook-to-hook fastener.
91. The system of claim 88, wherein the passive retaining
30 medium comprises a hook and loop fastener.

92. The system of claim 88, wherein the passive retaining medium comprises tape.

5 93. The system of claim 88, wherein the passive retaining medium comprises adhesive.

94. The system of claim 88, wherein the passive retaining medium comprises putty.

10 95. The system of claim 88, wherein the passive retaining medium is adhesively mounted to the landing element.

96. The system of claim 88, wherein the passive retaining medium is removably mounted to the landing element.

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97. The system of claim 88, wherein the passive retaining medium is affixed to a shoe mounted to the landing element.

20 98. The system of claim 97, wherein the shoe is removably mounted to the landing element.

99. A method for recovering an aerial vehicle using the recovery system of claim 88, comprising:

25 landing the aerial vehicle with the passive retaining medium on the landing element of the aerial vehicle in retention with the landing surface.

100. The method of claim 99, wherein the landing surface comprises a ship's deck.

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101. The method of claim 99, wherein the landing surface comprises a truck bed.
102. The method of claim 99, wherein the landing surface
5 comprises an offshore platform.
103. The method of claim 99, wherein the landing surface comprises ground.
- 10 104. The method of claim 99, wherein the landing surface comprises a landing pad.
105. The method of claim 99, further comprising providing the landing surface with a passive retaining medium thereon.
- 15 106. The method of claim 105, wherein the landing surface has a hook and loop fastener thereon.
107. The method of claim 105, wherein the landing surface has
20 a hook-to-hook fastener thereon.
108. The method of claim 105, wherein the landing surface has tape thereon.
- 25 109. The method of claim 105, wherein the landing surface has adhesive thereon.
110. The method of claim 105, wherein the landing surface has putty thereon.
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